GP4 Guitar Amplifier
User's Guide

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Important Safety Instructions

This symbol, wherever it appears alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that is sufficient to constitute a risk of shock.

This symbol, wherever it appears alerts you to important operating and maintenance instructions in the accompanying literature.

Please read this manual.

CAUTION: To reduce the risk of electric shock do not remove the bottom cover. There are no user serviceable parts inside. Refer servicing to qualified personnel.

WARNING: To reduce the risk of fire and electric shock, do not expose this appliance to rain or moisture. Take care not that the appliance is not exposed to dripping or splashing of liquids.

Detailed Safety Instructions

1) Read, retain, and follow all instructions. Heed all warnings.

2) Only connect the electric line cord to an earth grounded AC receptacle in accordance with the voltage and frequency ratings listed under INPUT POWER on the rear panel of this product.

3) **WARNING:** To prevent damage, fire or shock hazard, do not expose this unit to rain or moisture.

4) Unplug the AC power line cord before cleaning the unit exterior (use a damp cloth only). Wait until the unit is completely dry before reconnecting it to power.

5) Maintain at least 6 inches of unobstructed air space behind the unit to allow for proper ventilation and cooling of the unit.

6) This product should be located away from heat sources such as radiators, or other products that produce heat.

7) This product is equipped with a polarized plug (the central earth pin is offset). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. Do not defeat the safety purpose of this plug.

8) Protect the power cord from being walked upon, pinched or abraded.

9) This product should be serviced by qualified service personnel when the power supply cord or the plug has been damaged; or objects have fallen, or liquid has been spilled onto the product; or the product has been exposed to rain; or the product does not appear to operate normally or exhibits a marked change in performance; or the product has been dropped, or the enclosure damaged.

10) The power supply cord of this product should be unplugged from the outlet when left unused for a long period of time, or during electrical storms.

11) Do not drip nor splash liquids, nor place liquid filled containers on the unit.

12) CAUTION: No user serviceable parts inside, refer servicing to qualified personnel only.

13) The GP4 Amplifier and loudspeaker system is capable of producing very high sound pressure levels which may cause temporary or permanent hearing damage. Use care when setting and adjusting volume levels during use.

Foreword

Dear Customer

Welcome to the GP4 Guitar Amplifier group of users. GP4 is the result of extensive research and design, bringing together modern innovative technology with the traditional needs of the guitarist.

The GP4 has been design to give immediate access to the standard functions expected from a guitar amplifier with an intuitive front panel. However the GP4 is extremely versatile and has many features beyond that of most amplifiers that enable it to deal with a wide range of guitars, playing styles and performance locations.

Please read this manual, it will help you explore and use the full capabilities of your amplifier. Finally and importantly please be aware of all the safety instructions.

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1.0 Introduction

The GP4 guitar amplifier has been designed to provide sound re-enforcement and expression for a wide range of guitars and playing styles.

It is compact, powerful, versatile, light weight, enhancing the playing of both enthusiast and professional guitarist.

To cope with such a wide combination of available settings the GP4 automatically stores to one of six channel configurations. Even the rotary controls (except Input Gain and Master Volume) can have their positions stored and recalled.

The amplifier comes integrated with a number of popular effects and has audio outputs for amplifiers, mixers or speakers.

There is an extensive remote control facility via a Midi interface. With an optional footswitch providing a more basic alternative.

1.1 Before getting started

Your GP4 Amplifier has been carefully packed for transport. If the cardboard packaging shows any signs of damage the amplifier should be carefully inspected.

Please immediately inform the transport company from which you took delivery, or claims for replacement or repair may be rendered invalid.

Please ensure that the original packaging is used to return an amplifier.

Please ensure that children cannot play with the amplifier or the packaging.

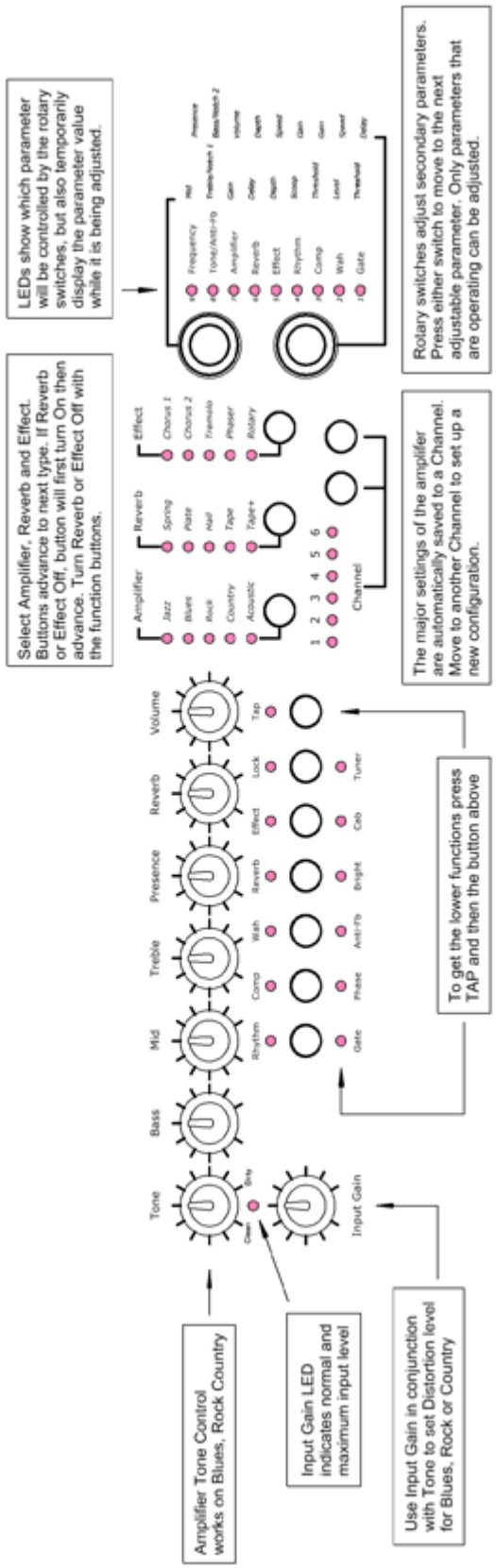
Please dispose of the packaging in an environ-mentally friendly way.

Please ensure that the GP4 amplifier has adequate ventilation, to the top and back. Do not cover or place near radiators

1.2 Quick Start Guide

The first time you switch on your GP4 amplifier it will turn ON all the LEDs and then revert to the clean Jazz amplifier setting, No Reverb, No Effect and Channel 1 selected. Turn the Volume and Input Gain control to minimum. Set the other controls to central positions. Plug in your guitar and set the Input Gain Control so that the Led above it flashes at a reduced brilliance compared with the other Leds when playing at any level. If the Input Gain is set too high the Led will flash at full brilliance, this should be avoided. Turn up the Volume as required.

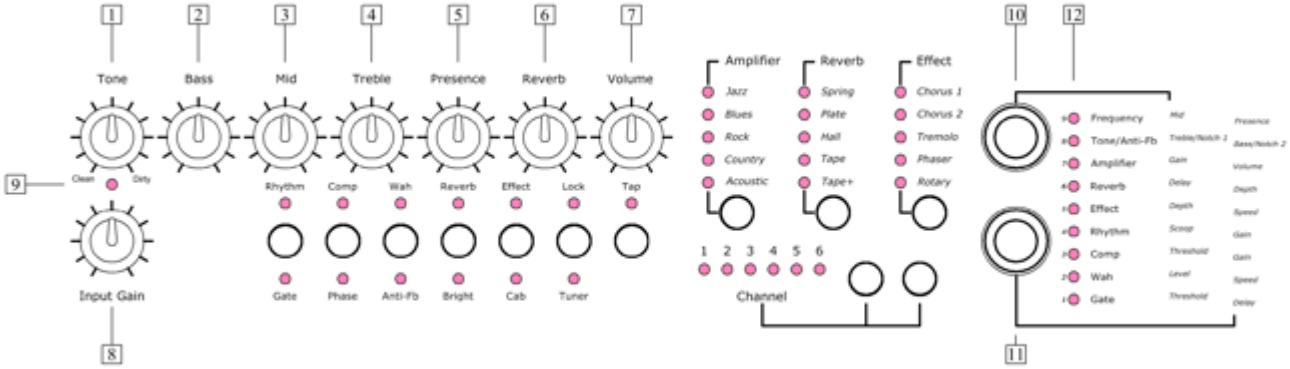
Now have a look at Figure 1.0. for a short summary of the GP4 front panel functions.


Select Amplifier, Reverb and Effect. Buttons advance to next type. If Reverb or Effect Off, button will first turn On then advance. Turn Reverb or Effect Off with the function buttons.
LEDs show which parameter will be controlled by the rotary switches, but also temporarily display the parameter value while it is being adjusted.
Rotary switches adjust secondary parameters. Press either switch to move to the next adjustable parameter. Only parameters that are operating can be adjusted.
The major settings of the amplifier are automatically saved to a Channel. Move to another Channel to set up a new configuration.
To get the lower functions press TAP and then the button above
Amplifier Tone Control works on Blues, Rock Country
Input Gain LED indicates normal and maximum input level
Use Input Gain in conjunction with Tone to set Distortion level for Blues, Rock or Country
Tone
Bass
Mid
Treble
Presence
Reverb
Volume
Input Gain
Amplifier
Reverb
Effect
Channel

Quick Start Guide

Figure 1.0

2.0 Rotary Controls



2.1 Level Controls

1 2.1.1 Tone

Sets the amount of distortion in the Blues, Rock and Country settings. When the Jazz and Acoustic amplifier operating modes are selected this control has no effect.

Initially start with the control in a central position, then set the Input Gain just to the point of distortion . The control will then provide a range of tone from clean through to heavy saturation with an approximately constant volume.

However there is no hard and fast rule determining how the Tone and Input Gain controls should be used in relation to one another and it is an area where the user can explore a wide range of possible tones.

8 2.1.2 Input Gain

9 Sets the amplifier operating level. Allows for the differing pickup sensitivities from guitar to guitar. The Input Gain should be set so that the Clip LED (9) occasionally comes On at half brightness, but never at full brilliance.

The Input Gain control is used in conjunction with the Drive control to set the amount and quality of distortion in the Blues, Rock and Country settings.

7 2.1.3 Master Volume

Sets the overall level from the loudspeaker power amplifier. (Internal speaker or external speaker output.) This control has no effect on the line outputs.

6 2.1.4 Reverb

Controls the level from the Reverb-Delay effects unit.

2.2 Tone Controls

2 2.2.1 Bass

Controls the level of low frequencies

3 2.2.2 Mid

Controls the level of mid frequencies. The frequency at which the control operates can be changed over a wide range with the Parameter - Frequency - Mid, see 2.3.2.

4 2.2.3 Treble

Controls the level of high frequencies

5 2.2.4 Presence

Provides a bell shape boost or cut. The frequency at which the control operates can be set over a wide range, 100 - 4000 Hz, set using the Parameter - Frequency - Presence, see 2.3.2.

2.3 Parameter Controls

10 11 These provide a simple means of controlling the large number of parameters that are associated with the various effects. These two rotary controls are of the digital type, having a click action, continuous rotation and a combined push switch.

12 The Parameter LEDs have a number of functions. The primary functions is to show the current Parameter that the Parameter Controls are going to modify.

2.3.1 Changing Parameters

The Parameter Control knobs are pushed momentarily to move to select the Parameter to be controlled. The upper Parameter Control moves up to the next selected parameter and similarly the lower Parameter Control moves down.

A parameter cannot be adjusted unless its associated effect is On. For example, the Reverb must be On before the Delay and Depth can be adjusted. If an effect is turned Off while its parameter is selected then the displayed parameter will revert to the Tone/Anti-Fb.

When a parameter is altered the approximate value is briefly displayed using the Parameter LEDs. The Parameter LEDs revert to normal operation after a couple of seconds.

The Amplifier, Reverb, Effect, Comp and Wah functions have more than two parameters. The additional parameters are accessed by holding the TAP button down at the same time as turning the parameter control.

2.3.2 Frequency

These parameter controls set the operating frequency of two of the tone controls, the Mid and Presence, provided the Lock is not in operation. The frequencies set are stored along with the Channel. This means that each Channel has its own Mid and Presence Frequency settings, but these are shared by all the possible Amplifier types for that Channel.

2.3.3 Tone/Anti-Fb

This parameter control has two functions. When Anti-Fb is not in operation the parameter controls adjust filters used to shape the overall low and high frequency response of the amplifier. One use would be to allow for variations from one guitar to another. To help with this the filter settings can be different for each channel allowing channels to be set for different guitars. Both the Bass and the Treble filters come before distortion generation. When Anti-Fb is in operation the two parameter controls are used to set notch filters that can be useful for suppressing feedback from electro-acoustic instruments. When a notch filter is set this remains independent of the channel.

2.3.4 Amplifier Gain/Volume

Sets the levels before and after the distortion generation. In the case of the clean Jazz and Acoustic amplifiers the two controls operate in series, both having the same effect. These two controls provide a unique Gain and Volume for each of the Amplifiers and for each Channel. It provides a powerful way of coping with different guitar sensitivities and presetting the output level.

Holding down TAP, and the upper parameter control will display the Midi Channel but not change it. The lower control will change the Midi Channel. See 6.0 Midi Interface.

2.3.5 Reverb Delay/Depth/Treble/Tape+ reverb

For Spring, Plate and Hall, the Delay control sets a short time delay that precedes the principle reverberation effect for which the Depth controls sets the length and density. For Tape and Delay, the Delay control sets the time delay and the Depth controls sets the feedback from the output of the delay back to its input.

Holding down TAP and moving the lower parameter control changes the treble response of the reverb. Holding down TAP and moving the upper parameter control changes the reverb that will be used in Tape+ and also provides access to a purely Digital Delay. The result is shown on the top four Parameter LEDs -

9 - Spring
8 - Plate
7 - Hall
6 - Digital Delay

2.3.6 Effect Depth/Speed/Chorus Delay Gain

Controls the Depth and Speed of the modulation used for each of the Effects. The Chorus Effects consist of mixing a time varying delayed signal with the original. The level of this signal can be altered with the Lower Parameter Rotary while holding down the TAP button. This allows subtle Chorus Effects to be set.

2.3.7 Rhythm Scoop/Gain

Scoop adjusts the level of the frequency selective scoop filter, 0-10 dB. Gain sets the overall cut in level from 0-15 dB.

2.3.8 Comp Threshold/Gain/Slope

The Threshold and Gain set the signal level at which compression starts and the output level from the Compressor. When the Guitar signal is greater than the Compressor Threshold signal compression starts and is indicated by the Compressor status Led dimming. The Compressor slope can be selected by holding down the TAP button and turning the lower rotary. The selected slope is shown on the top three parameter LEDs. The top most indicates infinite slope, the next two down indicate 4:1 and 2:1.

2.3.9 Wah Level/Speed/Location/Glide direction

When the Wah effect is turned On from the front panel it is in Auto Mode. That is the effect is controlled from the guitar signal level. The Level sets the threshold at which the Wah effect begins to operate. Turn the Level parameter control clockwise to increase the sensitivity to signal level. Speed sets how fast the Wah effect responds to changes in signal level. Turn the Speed parameter clockwise to make the Wah effect follow more closely changes in playing level.

Holding down TAP and changing the upper parameter allows the selection of whether the Wah filter location is to be before or after the distortion Tone generation. Clockwise selects pre distortion and displays ‘9’ on the parameter LEDs. Anti-clockwise selects post distortion and shows ‘5’. Similarly TAP plus the lower rotary selects the Auto-Wah filter glide direction. Clockwise rotation selects glide up and shows ‘9’ on the parameter LEDs, anti-clockwise selects glide down and shows ‘5’.

2.3.10 Gate Threshold/Delay

Threshold sets the signal level at which the Gate operates. When the signal level drops below the threshold the Gate blocks the signal after a short delay that can be set using the Delay parameter. The Delay parameter controls how rapidly the gate closes and can be used to match the Gate characteristic to your playing style. Short delays give a very abrupt ending which when used with a high threshold can provide an interesting effect in itself.

2.3.11 Automatic Parameter Selection

This is a facility that can be turned ON and OFF using TAP+Parameter UP or TAP+Parameter Down. When ON, the selection of Reverb, Effect, Wah, Comp, Rhythm, Gate, AntiFb, will automatically cause the associated parameter to be selected.

3. Push Button Switches

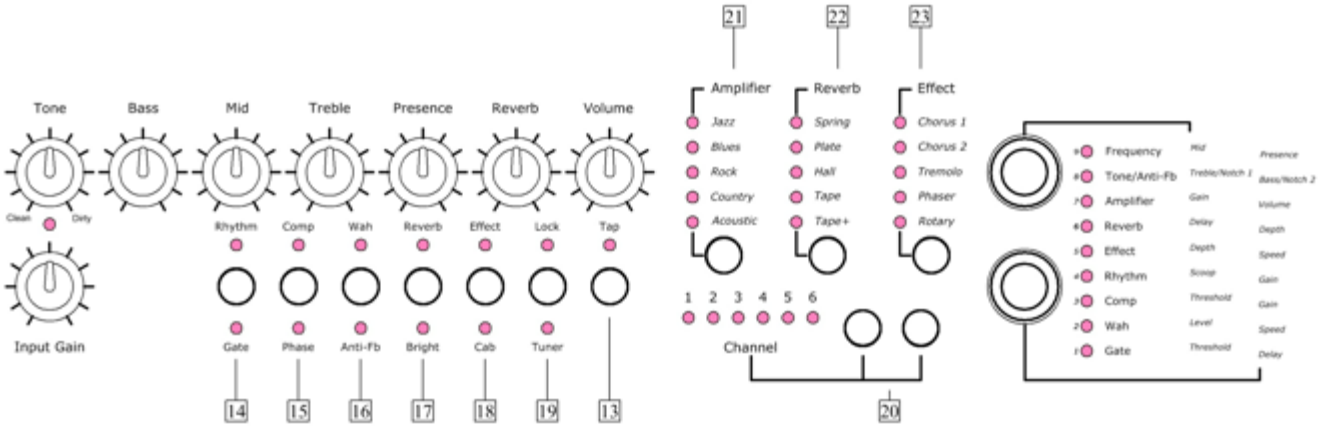


Fig 3.0 GP4 Front Panel Push Button Switches

The six buttons on the left (14-19) each control two functions as indicated by the status of the LEDs above and below the button. Normally pressing any of these will operate the function that is indicated by the LED above the button.

To operate the function below the button first press the TAP button and then the required function button within one second. Once a time period of one second has passed the buttons will revert to controlling the upper functions.

13 3.1 Tap

This button has two functions -

1. To access the lower functions of the six buttons to the left. To do this press the TAP button and then within one second the button for the required function. Pressing a second button within the one second time period also cancels the TAP one second time period. For example pressing the TAP button twice will cancel its effect.

2. To control the speed of certain effects parameters by tapping the TAP button at the required speed.

The parameters that can be controlled are -
1. Tape repeat time
2. Tremolo or Rotary speed

When a parameter can be set using the Tap button the LED above will be illuminated. To select a parameter for Tapping, the effect must be ON, and the parameter selected using the Push switches in the Parameter rotary controls.

14 3.2 Rhythm

When ON, the volume is reduced and the mid frequencies reduced by amounts that can be adjusted by the Parameter controls (see section 2.3.5)

The effect consists of two parts -
1. A frequency selective scoop filter providing 0-10dB cut at 600Hz
2. A gain control with a 15dB range.

The filter and gain control operate in front of any distortion generation. When Rhythm is ON it has its own settings for the ON-OFF status of Compressor, Wah, Reverb, and Effect. The way these are set when Rhythm is ON, will stay with it. When Rhythm is turned OFF, the original settings for Compressor, Wah, Reverb, and Effect will be restored.

3.3 Gate

Turns ON/OFF a signal gating system. This comprises a signal level dependent switch that blocks the input when it has fallen to a low level. The aim is to remove noise signals that could be of annoyance when the wanted guitar signal is not sufficient. The Gate function has two Parameters, Threshold and Delay, (see 2.3.20)

15 3.4 Comp

Turns the Compressor ON/OFF.

This comes before the distortion section. The compressor slope is accurately controlled to 2:1, 4:1 or infinite slope. (See 2.3.8) For a 2:1 slope a 2 dB change at the input above the compressor Threshold gives 1 dB change at the output. Similarly 4:1 gives 1 dB change in output for 4 dB change at the input. Infinite slope means that the output remains essentially constant for inputs above the Threshold. The 2:1 slope is effective in controlling instrument dynamics while maintaining expressiveness.

The Compressor effect is controlled by setting the level above which compression begins and the output level. These are set by the parameters Comp - Threshold/Gain. (see 2.3.8)

The compressor action is only operative above a fixed input level Threshold. When this Threshold is exceeded the Comp LED will brighten, indicating that the signal is now being compressed.

3.5 Phase

Reverses the Phase of the Output in relation to the input. This is primarily for use when the Amplifier is in

Acoustic Mode to get the best working conditions where an electro -acoustic guitar is the signal source.

16 3.6 Wah

Turns Auto Wah ON/OFF. This has four Parameter controls, Level, Depth, Location and Glide Direction (see 2.3.9). The operation is triggered from the guitar signal level. For the effect to operate correctly Level must be adjusted for the desired effect.

3.7 Anti-Fb

When ON Anti-Feedback places in the signal path two notch filters that can be used to reduce the possibility of acoustic feedback. These notch filters can be swept over a wide range. The frequency at which they operate can be set from the Parameter controls Notch 1 and Notch 2 (see 2.3.3).

17 3.8 Reverb

Turns Reverb ON/OFF. See Reverb 3.15

3.9 Bright

Bright applies a boost to upper mid frequencies.

18 3.10 Effect

Turns Effect ON/OFF. See Effect 3.16

3.11 Cab

Applies to the Line Output frequency response shaping that rolls off the extreme bass and treble simulating the natural response of a guitar amplifier cabinet and loudspeaker drive unit.

19 3.12 Lock

The Lock button controls a memory system for storing and recalling the positions of the Drive, Bass, Mid, Treble, Presence and Reverb rotary controls for each Channel. To store the locations of these controls, press the Lock button and hold it down until the Lock LED flashes. To recall stored locations press the Lock button in the normal way (briefly). The Lock LED will be illuminated. The Drive, Bass, Mid, Treble, Presence and Reverb rotary controls will no longer have any effect, but their position relative to the stored value is temporarily displayed on the Channel LEDs. When the control is in the same position as the stored location the central four Channel LEDs will be illuminated. This pattern of LEDs will move left or right as the control is moved either side of the stored value.

3.12.01 Lock Edit

If it is required to adjust the position of an individual Locked control this can be done by enabling the Lock Edit mode. The Lock Edit mode can only be entered when Lock is ON. With Lock ON, hold down the TAP button then press and release the Lock button. The Lock Led will commence flashing, indicating that the Lock Edit mode is in operation. Moving any of the rotary controls while the Lock LED is flashing will over ride the stored value. Frequency Parameters for Mid and Presence can also be adjusted (see 2.3.2). Press the Lock button again when all the changes are made, the new values will be stored and the Lock condition will be resumed.

3.13 Tuner

Turns on the built-in guitar tuner. All normal LED display functions are suspended. Pressing any button other than TAP will return the amplifier to normal operation. As each string is played the string number is displayed using the top six parameter LEDs. The top most LED corresponding with top E. The deviation from correct tuning is displayed using the Channel LEDs. Correct tuning is indicated by all six LEDs being illuminated. This pattern moves left and right as the string pitch is below or above the correct pitch. The end LEDs remain permanently illuminated. To get the fastest and most consistent response to the string pitch it is helpful to make sure that the five strings not being tuned are damped.

The factory preset value for A is 440 Hz, but this can be changed from 440 to 448 Hz. To do so, engage the Tuner operation. Hold down the TAP button, the value for A will be shown on the Parameter LEDs, top to bottom indicates 440 to 448 Hz (9-1). The value for A can be altered using the lower rotary.

The Tuner function also provides a convenient way of quickly Muting all the audio outputs.

21 3.14 Amplifier (Select)

Selects the style of Amplification. The Jazz and Acoustic settings are clean. The Acoustic frequency response is overall flat and includes frequency compensation for the drive unit to give the best response for an electro-acoustic instrument.

The Country, Blues and Rock settings have the option, using the Drive control, to add varying levels of distortion. Jazz, Blues and Rock have a similar frequency response providing a bright punchy tone. The Country setting has mid frequency scoop and lighter distortion to provide a clear, singing tone.

Where a jazz guitarist would like slight distortion, to add colour and limit the dynamic range, the Country, Blues and Rock settings can be used with the drive control kept toward its minimum.

22 3.15 Reverb (Select Type)

Selects the type of Reverb or Delay. When the Reverb is OFF there are no LEDs illuminated. If the Reverb is OFF pressing the Reverb button will turn the Reverb ON without changing the selected Reverb type. When the Reverb is ON pressing the Reverb button will select the next reverb type.

Spring, Plate and Hall provide a short delay followed by high quality stereo reverberation system with the two outputs going to the internal power amplifier and line output. The delay and reverb time can be set from the Parameter controls (see 2.3.3).

The Spring setting provides a good general purpose reverb similar to a traditional mechanical unit. The range

of variation of delay and reverb is limited in keeping of what can be expected from such units.

Plate provides a bright medium delay, while the Hall setting is expansive and diffuse with the options for setting long reverb times.

Tape provides a straight delay with feedback for providing decaying repeats. The Tape setting simulates the softer response associated with a mechanical tape loop echo unit. The time delay and repeat level can be set by the Parameter Controls (see 2.3.3).

Tape+ provides the combination of Delay and Reverb or a purely Digital Delay. Delay and feedback are set in the same way as Tape. The Reverb type can be selected from one of three possibilities by selecting the the Reverb Parameter (see figure 2.0 [10][11]) holding down the TAP button and turning the lower Parameter Control [11]. The selected Reverb Type is displayed momentarily on the top three parameter LEDs corresponding to Spring(9), Plate(8), Hall(7) from the top downwards.

Tape+ also provides the option of a purely digital delay. This can be selected as above by holding down the TAP button and turning the lower Parameter Control [11] and selecting parameter (7).

The Reverb path has its own tone control that can be accessed from the Parameter Controls. To adjust the Reverb treble, the Reverb must be On, select the Reverb parameter, press and hold down the TAP button, while using the lower rotary control to adjust the Reverb treble level. The Reverb tone is set independently for each Channel, but all the Reverb types within one Channel setting will share the same tone.

23 3.16 Effect (Select)

Selects the Effect type. When the Effect is OFF there are no LEDs illuminated. If the Effect is OFF pressing the Effect button will turn the Effect ON without changing the selected Effect type. When the Effect is ON pressing the Effect button will move to the next option.

There are four different effects, Chorus 1 and 2, provide a light and full chorus. Tremolo is a traditional amplitude modulation. Phaser gives a rich time delay derived phasing effect, while Rotary gives a pleasing frequency modulation inspired from mechanical rotating loudspeaker systems. All of the effects can have there depth and speed set from the Parameter controls. In addition the TAP button can be used to set the speed of the Rotary and Tremolo.

20 3.17 Channel

The channel switching system is a way in which the user can quickly switch the amplifier from one configuration to another. The system is simple, all of the current amplifier conditions are stored automatically to the displayed channel, except for the Volume and Input Gain. If the Drive, Bass, Mid, Treble, Presence, Reverb are to be stored along with the channel then the Lock must be On. Pressing the Channel buttons cycle left or right through the available channels.

3.18 Channel Copy

The entire settings of one Channel can be copied to its neighbour, up or down. This is done by holding down TAP while pressing Left or Right Channel. The LED for the Channel that is to be the destination of the copy will start to flash. Holding down TAP and pressing the same Channel button again will confirm the copy, with both Channel LEDs flashing a couple of times. Pressing a Channel button without TAP will cancel the Copy operation and cause a normal Channel change.

4. Restoring Factory Settings

To restore all the settings that your amplifier came with, switch On the amplifier while holding down the TAP button. The LED above the the TAP button will flash three times, if the TAP button is still being held down after the third flash the factory settings will be restored, releasing the button before will cancel the restore operation.

5. Audio Line Output

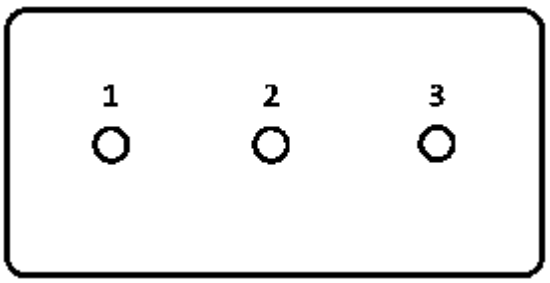
Low level audio output is available from either ¼" jack or XLR socket. The XLR output is suitable for feeding a balanced line by using signal connections to pins 2 and 3. If an un-balanced output is required from the XLR socket then the signal should be taken from pins 2 and 1. There is no audio signal on pin 3, but this terminal provides an impedance to ground that matches the impedance of the Signal High output. This helps minimise common mode interference.

XLR Line Out Signal Connections

1 - Ground.
2 - Signal High
3 - Signal Low

6. Footswitch Input

A optional footswitch input is available on the back panel. This uses a standard 1/4” jack stereo jack socket. The control input is compatible with the Switch-3™, 3 button footswitch, from TC-Helicon™. The buttons provide control of Channel selection, Rhythm and Tuner, the latter can also act as an amplifier mute.



Button 1	Select next Channel down- wrapping round from 1 to 6
Button 2	Select next Channel up- wrapping round from 6 to 1
Button 3	Rhythm On - Off
Button 3 - hold down for 1 second	Tuner ON (output mute) -press any button to return to normal operation

7. Getting a good Distortion Tone

For those who want to get down to the nitty-gritty you can skip the next couple of paragraphs in which I provide an overview of the object of applying distortion to the guitar.

The Electric Guitar and Distortion - brief overview

The Electric Guitar is characterised by long thin steel strings attached to an almost completely non-resonant body, with a transducer system that has minimal effect on the string vibration and is used to provide an electrical facsimile of the string vibration. Such a system when played through a high performance low distortion amplifier produces a delicate sound with a large initial transient and considerable high harmonics. Plucking a string more heavily tends to produce more volume but with little change in harmonic structure. It has much in common with the Harpsichord, also a plucked instrument with thin steel strings, and like the Harpsichord struggles when used up against other instruments. The Harpsichord was superceded by the Piano which among other things is characterised by having thick strings under high tension on a heavy frame. This type of development is not available to the electric guitar. It must remain within the capabilities of the human hand for its operation, where if anything the demands of modern playing have meant that strings have got thinner.

The inspiration for the modern electric guitar tone is more in line with the characteristic of the Saxophone. Here we have an instrument with considerable power in the lower harmonics and very little in the way of initial transient. In addition when blown heavily the Saxophone is capable of considerable thickening of the middle harmonics due to distortion added by non linear movement of the reed. The electric guitar does not naturally produce a noticeable thickening of harmonics when plucked with more force, but there are two ways of achieving this, by saturation or clipping of the signal in the Pickup or in the Amplifier. This process also has the desirable effect of reducing the initial transient. Amplifier clipping initially came about because of normal short comings rather than intentional design, but was eventually recognised as an integral and desirable characteristic of an amplifier intended for guitar amplification.

GP4 and Distortion Generation

The aim of GP4s Distortion is to reduce but not eliminate the initial transient, to thicken the lower harmonics and increase the sustain. By carefully controlling the onset of distortion new capabilities of expressiveness become possible. Unlike traditional amplifiers the distortion is available at all operating levels. Due to the peculiarities of human hearing our ability to hear extreme bass and treble frequencies at low listening levels is less than at high levels. Thus an amplifier set up for moderate room levels will be perceived as having too much treble and bass when operated at higher levels for a larger environment. This means that the treble, mid and bass controls cannot be used to control the distortion and are placed after distortion generation. The guitar source signal has considerable effect on the distortion tone. In general we want moderate upper middle harmonics and not too much bass. This means that it is necessary to have control of the bass and treble response in front of the distortion generation to cope with the wide range of signals from humbucker to single coil pickups from bridge position to neck position.

The following controls operate in front of the distortion generation :-

1. Tone/Treble and Tone/Bass (see 2.3.3)

These two filters are extremely useful. They both have a shelving shape. This means that after applying a mild cut the response flattens out leaving more of the extreme treble and bass than if traditional bass and treble tone controls were used.

2. Presence Control (see 2.2.4)

This control offers considerable opportunities for experimentation. Unlike its operation in a traditional amplifier that would be at a single fixed frequency, the GP4 Presence Control can operate over a wide range of frequencies from 100 Hz up to 4 KHz.

3. Compressor (see 3.4)

The high performance GP4 compressor can be used to control the depth of distortion. Set a 2:1 compression with a Threshold at or just above the point at which distortion commences and then adjust the Gain for the overall level of distortion. The general characteristic of compression in front of distortion is to give a very fluid sound with a singing quality, together with a reduction in inter-modulation distortion that makes more sense of chords.

8. Midi Interface

8.1 Introduction

The GP4 Amplifier has Midi Input and Thru Sockets. The Thru socket passes out all the data that appears at the Input socket. The Midi input allows the remote control of the main amplifier functions, together with real time control of the Wah frequency and overall volume. The Midi control codes for these are compatible with those produced by the Behringer FCB1010, using factory presets for the V-AMP family products. With this setting the left expression pedal will control Wah frequency and the right will control the volume.

8.2 Midi Messages

The table shows all the midi messages that GP4 will respond to. X indicates a value that is not used. All of the commands behave in a similar way to the front panel controls with the exception of Wah ON. This disables the Auto Mode and instead the Wah frequency can be controlled by a foot pedal that supplies Wah Frequency Control values. Note that if the overall volume is changed using the Midi Controller and the controller is removed or the Midi disabled or the Midi address changed the volume will remain as set. The normal volume can be restored without the aid of a Midi Controller by switching the GP4 Off and back On.

8.3 Setting the Midi Channel

The Midi control can be disabled or set to respond to commands on Midi channels 1 - 9. This is done by the use of the Parameter controls and the TAP button. Press the Parameter controls to select the Amplifier Parameters. To display the Midi Channel without changing it, hold down the TAP button and turn the Upper Parameter Control. If all the Parameter LEDs are extinguished this indicates that Midi is OFF. If Midi is ON then the Parameter LEDs will indicate the channel in the range 1-9. To change the Midi channel or turn Midi OFF, hold down the TAP button and use the lower parameter control. After the parameter LEDs have displayed the Midi state they will revert back to normal operation after a couple of seconds.

8.4 Midi Message Codes

Command	*Byte 1*	*Byte 2*	*Byte 3*
Volume	Control	7	0 - 127
Wah Frequency	Control	27	0 - 127
Select Channnel 1	Program Change	0	X - don't care
Select Channnel 2	Program Change	1	X
Select Channnel 3	Program Change	2	X
Select Channnel 4	Program Change	3	X
Select Channnel 5	Program Change	4	X
Select Channnel 6	Program Change	5	X
Rhythm ON	Program Change	10	X
Compressor ON	Program Change	11	X
Reverb ON	Program Change	12	X
Effect ON	Program Change	13	X
Lock ON	Program Change	14	X
Rhythm OFF	Program Change	15	X
Compressor OFF	Program Change	16	X
Reverb OFF	Program Change	17	X
Effect OFF	Program Change	18	X
Lock OFF	Program Change	19	X
Jazz Amplifier	Program Change	20	X
Blues Amplifier	Program Change	21	X
Rock Amplifier	Program Change	22	X
Country Amplifier	Program Change	23	X
Acoustic Amplifier	Program Change	24	X
Spring Reverb ON	Program Change	30	X
Plate Reverb ON	Program Change	31	X
Hall Reverb ON	Program Change	32	X
Tape Reverb ON	Program Change	33	X
Tape+ Current Preset Reverb ON	Program Change	34	X
Tape+ Spring Reverb ON	Program Change	35	X
Tape+ Plate Reverb ON	Program Change	36	X
Tape+ Hall Reverb ON	Program Change	37	X
Reverb OFF	Program Change	39	X
Chorus 1 Effect ON	Program Change	40	X
Chorus 2 Effect ON	Program Change	41	X
Tremolo Effect ON	Program Change	42	X
Phaser Effect ON	Program Change	43	X
Rotary Effect ON	Program Change	44	X
Effect OFF	Program Change	49	X

8.4 Midi Message Codes

Command	*Byte 1*	*Byte 2*	*Byte 3*
Wah Auto Pre-distortion ON	Program Change	51	X
Wah Auto Post-distortion ON	Program Change	52	X
Wah Pedal Pre-distortion ON	Program Change	53	X
Wah Pedal Post-distortion ON	Program Change	54	X
Wah Auto Pre-distortion Glide Down ON	Program Change	55	X
Wah Auto Post-distortion Glide Down ON	Program Change	56	X
Wah OFF	Program Change	59	X
Gate ON	Program Change	60	X
Phase ON	Program Change	61	X
Anti Feedback ON	Program Change	62	X
Cab Filter ON	Program Change	63	X
Bright ON	Program Change	64	X
Gate OFF	Program Change	65	X
Phase OFF	Program Change	66	X
Anti Feedback OFF	Program Change	67	X
Cab Filter OFF	Program Change	68	X
Bright OFF	Program Change	69	X
Tuner OFF	Program Change	70	X

9. Summary of Parameter Control Functions

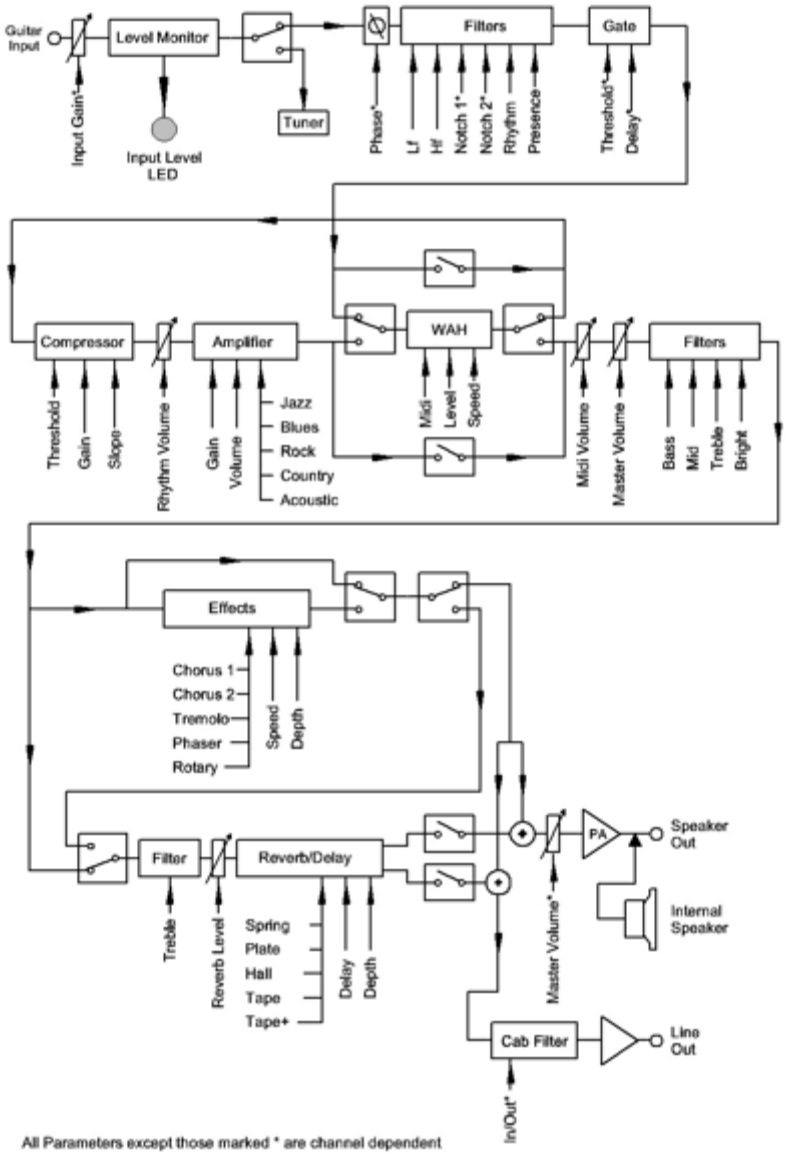
	Parameter	**Upper Control Parameter**	**Lower Control Parameter**	**TAP+Upper Control Parameter**	**TAP+Lower Control Parameter**
9	Frequency	Mid Control	Presence Control		
8	Tone/Anti-Fb	HF/Notch 1	LF/Notch 2		
7	Amplifier	Gain	Volume	Show Midi Channel	Change Midi Channel
6	Reverb	Reverb Pre-Delay Tape Delay	Reverb Time Tape Feedback	Reverb selected for Tape+ (9-7) Select Digital Delay (6)	Reverb Treble
5	Effect	Depth	Speed		Chorus Delay Level
4	Rhythm	Scoop Level	Volume		
3	Comp	Threshold	Volume		Select Compression Slope
2	Wah	Threshold	Release Speed	Select Wah Pre/Post distortion	Select Auto Wah filter glide direction
1	Gate	Threshold	Hold Time		

10. Specification

MODEL:		GP4
MAINS VOLTAGE:		230 V~, 50 Hz
POWER CONSUMPTION:		80 W max.
FUSE:		630 mA(T)
POWER OUTPUT:		30W
SPEAKER UNIT:		Celestion G12H 30W Anniversary
DIMENSIONS:		430 x 520 x 260 mm (H x W x D)
WEIGHT:		16.6 Kg
AUDIO INPUT:		1/4” Mono Jack
	Input Impedance:	1M ohms
LINE OUTPUT(1):		1/4” Mono Jack
	Output Impedance	1K ohms
	Nominal Level	0 dBV
LINE OUTPUT(2):		XLR
	Output Impedance	1K ohms, impedance balanced
	Nominal Level	0 dBV
SPEAKER OUTPUT:		1/4” Jack
	Minimum Load	8 ohms
	Maximum Output Power	30W
FOOTSWITCH INPUT:		1/4” Stereo Jack
MIDI IN:		5 pin DIN
MIDI OUT/THRU:		5 pin DIN

Product specifications are subject to change without notice.

11. GP4 Signal Path



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